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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

February 18, 1939

Mike

See Page 105

A SCIENCE SERVICE PUBLICATION

Do You Know?

Grasshopper eggs may survive long exposure to cold, if they are in moist soil.

The temperature at the surface of the planet Venus may be as hot as boiling water—one reason why Venus probably has no forms of life.

Archaeologists in Egypt recently found a nobleman's tomb in which a full repast was spread out on dishes, many of the foods still identifiable after 5,000 years.

There are now 21 flying hospitals—seaplanes carrying medical or other emergency aid to ships at sea—stationed at eight air bases along United States coasts.

The first white man to witness the Hopi Indian snake dance was a Spaniard who watched this ceremonial plea for rain at the pueblo of Acoma in New Mexico.

Since so many country boys and girls go to work in cities or turn to non-agricultural pursuits, one economist suggests that rural schools should include other training besides farming in vocational programs.

The quiz idea has been applied to museum exhibits: the visitor chooses to press one out of five labeled buttons beneath each mineral in an exhibit, and his score is automatically registered on a dial, together with the right answers, when he finishes the test.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

AERONAUTICS

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What new instrument will tell an airplane when his other instruments are telling the truth? p. 100.

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TECHNOLOGY

For how many years have men been taking photographs? p. 104.

WILDLIFE

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Moving picture films are gaining use in teaching mathematics.

Of all the big apes, the gibbon seems to be most man-like in its family and social life.

Spraying house plants regularly with some such device as a small laundry sprinkler will help the plants to withstand hot, dry atmosphere.

About 2,000 research studies made by technically trained WPA workers are listed in an "Index of Research Projects" issued in Washington.

The first law against jaywalking was adopted in Indianapolis, 25 years ago.

Eels reverse the spawning habit of salmon, in that fresh-water eels migrate to the ocean to spawn and die there.

In excavating Pompeii, skeletons were sometimes found in hollow spaces in the volcanic ash, and by pouring in plaster, casts of the bodies were obtained.

Children who get a good deal of sunshine have less dental decay than children who live where there is meager sunlight, judging by a study of 94,000 boys.

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GENERAL SCIENCE

Defense of Democracy Urged At Meeting of Scientists

Rallies in Twenty-Six Cities and Universities Discuss Necessity for Action to Preserve Science

KEYNOTING for a host of scientist speakers at Lincoln's birthday rallies in 26 cities and university centers throughout the country, Secretary of Agriculture Wallace summoned his fellow-scientists and fellow-citizens to a crusade in defense of democracy and against persecution of racial minorities.

Beliefs that one race is superior to another have no basis in scientific fact, Secretary Wallace, known among men of science as an expert plant breeder, declared at a mass meeting attended by more than 1,000 scientists in the Waldorf-Astoria Hotel in New York City.

"Let us dedicate ourselves anew to our democratic body of faith," he urged, "to the promotion of a stable but ascending general welfare . . . Let us dedicate ourselves anew to the belief that there are extraordinary possibilities in both man and nature which have not yet been realized, and which can be made manifest only if the individualistic yet cooperative genius of democratic institutions is preserved."

Outstanding men have arisen in all racial groups and will continue to arise, in even greater numbers, if their environments provide them with the opportunity, the secretary continued. "The seed bed of the great leaders of the future, as of those of the past, is in the rank and file of the people."

Organization Planned

American scientists will create an organization to strengthen democracy and to defend science's precious right to freedom of research, Prof. Franz Boas, Columbia University's noted anthropologist, pledged at the rally, which was called by the Lincoln's Birthday Committee for Democracy and Intellectual Freedom of which Prof. Boas is chairman.

Attacking the pseudo-scientific basis for exaggerated racial claims of apologists for Nazism, Mr. Wallace declared "the color of a cow's hair, for instance, has nothing to do with her ability to produce milk and there is no reason to think that the color of a man's hair has anything to do with his ability to produce ideas.

"And so it is quite possible that the master breeder, being concerned primarily with physical appearance, would find he had produced a group of blonde morons—useful to him mainly as a superior type of cannon fodder," he asserted.

Democratic peoples must be continually on guard to defend their freedom, Prof. Boas warned, in pledging that scientists will do their part. Though he identified the totalitarian states as the main threat, he recalled that a "bigoted majority may be as dangerous to free thought as the heavy hand of a dictator."

Twenty-eight leading men of science, including Nobel prizeman Harold C. Urey of Columbia, who was chairman of the New York rally, compose the newly-organized Lincoln's Birthday Committee.

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GENERAL SCIENCE

Scientists Ask Themselves Four Questions for Freedom

TO SPUR their defense of intellectual freedom and stop the spread of racial or religious discrimination, scientists throughout the country asked themselves four questions at mass meetings held in leading centers of research on Lincoln's birthday.

Acting under the leadership of a committee of 28 noted colleagues headed by Prof. Franz Boas, distinguished anthropologist and foe of oppression, they propose to find out:

"1. How can the scientist insure freedom of research and socially useful application of the fruits of his research?

Combat Discrimination

"2. How can scientists and educators best help to combat racial, religious and other forms of discrimination which violate the letter or spirit of the Declaration of Independence and the Bill of Rights?

"3. How can the schools best meet the obligations which rest upon them as fortresses of democracy?

"4. How can the government most effectively assist the expansion of science and culture?"

ORNATE BREASTPLATE

Remember the breastplate set with twelve stones worn by high priests in the Old Testament? Here is evidence that an Assyrian king, who reigned shortly after King Solomon's era, wore a strikingly similar device with nine rosettes when he appeared on priestly duties. The Boston Museum of Fine Arts, acquiring this small amber and gold image, calls it excessively rare. Only one other royal Assyrian statue "in the round" is known. Curiously, both are portraits of King Ashurnasir-apal, low-brow fighting king who expanded Assyria and set the stage for the Middle Assyrian Empire, with revolting cruelties. It happened in the ninth century B. C.

From answers to these questions, the Lincoln's Birthday Committee for Democracy and Intellectual Freedom believes, will come a program for a sustained campaign by men of science against forces inimical to scientific progress.

Discussion meetings were held in New York, Boston, Albany, N. Y., Chicago, Philadelphia, and Washington; at Stanford, Miami, Purdue, and Duke Universities, and at the Universities of Oklahoma, Illinois, California, Kentucky, Wisconsin, Virginia, Nebraska and others.

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The first detailed survey of fur farming in the United States is being made.

Dairy farmers in this country keep records of milk production on only two cows out of a hundred.

AERONAUTICS

New Robot Pilot for Planes Warns If Instruments Err

Newest Addition to the Instrument Board Can Flash As Many as 90 Lights for as Many Kinds of Trouble

AVIATION has a new robot pilot which automatically warns the men in the cockpit if something goes wrong. It is arousing wide interest among airmen as a possible safety advance of first rank importance.

Developed by engineers of the Curtiss-Wright Corporation's St. Louis Airplane Division under C. W. France and George Page, Jr., the new "tell-tale" robot can flash on 90 lights to announce as many kinds of "trouble" before it happens. It "watches" the plane's instruments continually.

If landing flaps are not operating properly when the plane comes in for a landing, for example, a light labelled "wing flaps" flashes on and calls the human pilot's attention to the situation. If the airport battery car is still plugged in when the pilot gets ready to start, the indicator lights another lamp.

Failure to notice a dial that shows something out of kilter will be prevented by such a device. It may help prevent accidents in the future by simplifying the task of pilots in the midst of an increasingly complex welter of instruments.

The "tell-tale" indicator is the second robot pilot to find its way into the cockpit. The first, the gyro-pilot, is today at the controls nine-tenths of the time commercial airliners are aloft.

Ten pre-selector switches enable the pilot to set the system for each of the main operations concerned in flying an airliner. Pressing one of the switches picks out the particular combination of instrument readings and control adjustments proper to the chosen operation. Deviation from the proper combination causes the revealing light to flash on. Switches are provided for test, start, taxi, take-off, left engine, right engine, cruise, landing, stop and off.

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ARCHAEOLOGY

Ruins Yield Clues To Hittite Palace Life

THE MYSTERIOUS Hittites are not nearly so mysterious as they used to be.

Archaeologists are persistently digging up Hittite cities in Asia Minor and Syria to the north and northwest of Palestine. As a result, Hittites are now classed respectfully with the big powers of antiquity, and their two eras of expansive empire, when they dominated wide regions of the ancient world, are being restored in some detail to pages of history.

One gap in knowledge of Hittite fortunes has been the time between 1650 B.C. and 1400. That was between the two great empire eras, when Hittite kings seem to have lacked the militaristic urge to power.

So, it is a red letter Hittite day when Sir Leonard Woolley excavating for the British Museum at Atchana, near Antioch in northern Syria, finds a Hittite palace that was built about 1600 B.C. and burned near 1400.

Whether the era was considered a time of fortunate peace, or one of weak depression, by people in those days, the palace ruins at Atchana suggest that Hittite rulers there lived well and conducted business as usual.

Wrecked by fire though it was, the palace ruins tell an amazing lot to an archaeologist. Sir Leonard identifies suites of rooms with bedroom and bath and points out women's apartments marked by the combs, pins, trinkets and toilet boxes in the debris. Other rooms containing little besides clay tablets and wine jars are presumed to have belonged to scribes—the secretaries and clerks.

In one annex to the palace is a suite of work room, bedroom and lavatory, which belonged apparently to the archivist, since a room built especially for storing records is near it. Most of the tablets stored here were removed in the fire 3,400 years ago, but elsewhere in the annex offices 300 clay documents awaited the archaeologists.

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FORESTRY

Plant Grove in Hope Of Saving Chestnuts

KEEPING alive a remnant of America's nearly vanished chestnut forests is the task which botanists at North Carolina State College near Raleigh, N. C., have set for themselves. The species has been practically wiped out during the past 35 years by a fungus blight.

The botanists at State College have planted a grove of healthy young chestnut trees, 200 miles from the nearest natural chestnut habitat, in the hope that this isolated little group will escape the blight. The trees have now been standing for four years and appear healthy.

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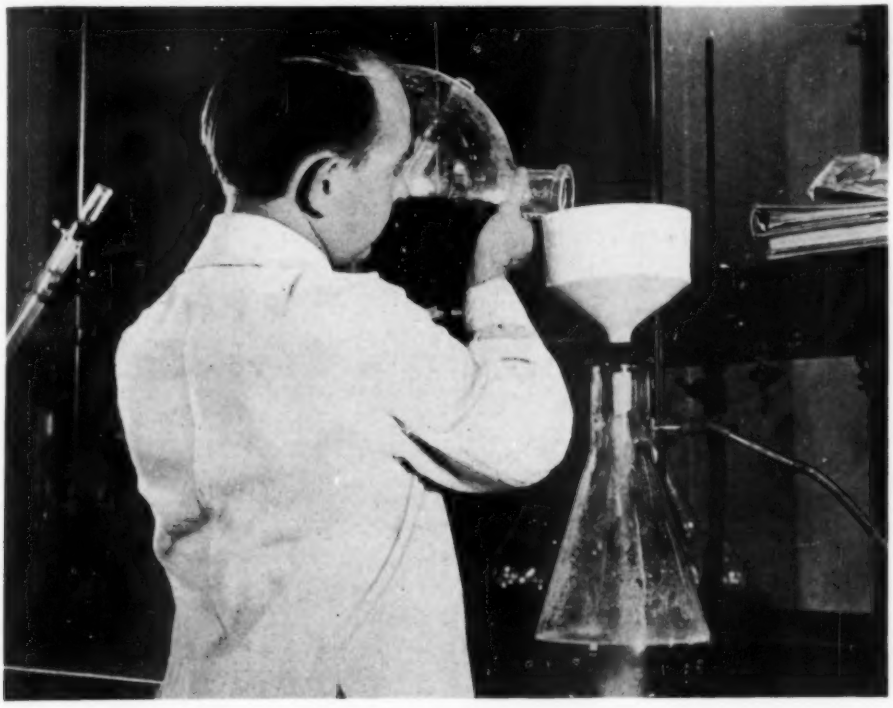
WHERE IT GOES

Here's what happens to some of the hair that finds its way to barber shop floors—it goes into the manufacture of amino acids, building blocks of nature from which life-essential proteins are made and which have a variety of uses in science. The photo shows a laboratory assistant cleaning a tub of hair.



A STEP IN THE PROCESS OF GETTING ACIDS FROM HAIR

After treatment with hydrochloric acid, impurities are removed with a filter. Later the acids are isolated, purified, tested for purity and end up in bottles whose contents are worth as high as $1,000 a pound.

WILDLIFE

Wild Ducks Still Suffering From Last Fall's Hurricane

Efforts to Save Trumpeter Swan and Desert Mountain Sheep Related Before Fourth North American Wildlife Conference

WILD ducks of the North Atlantic coastal marshes are still suffering from the effects of the New England hurricane of last autumn. It will be several years before the wet world where they like to swim and feed will be back to normal, Richard Griffith of the U. S. Biological Survey told the Fourth Annual North American Wildlife Conference in Detroit.

Giant waves whipped up by the great wind did the ducks dirt, coming and going. When the water rushed in, it cut away the barrier beach at many points, washing large quantities of sand on to the marshes bordering the inside beach. Then, when the water ran out again, it scoured many acres of bay bottom, removing large quantities of food, as well as the bottom muck that grows duck food.

One good thing, the ill wind blew the ducks: it cut new inlets, permitting tides to run more freely into the ditches that have been cut into the marshes as an anti-mosquito measure. This greater tidal play in the marshes is an advantage from the duck point of view.

The situation is not hopeless, however, Mr. Griffith made plain. In from two to five years the various types of wildfowl food will have reestablished themselves.

The "graceful white swan" of the popular ballad is very close, in one species at least, to total extinction. Not more than 200 trumpeter swans remain in the United States, and a small number in northwestern Canada, A. V. Hull of the U. S. Biological Survey told the Conference.

Efforts to keep the species in existence and to increase the number of birds are facilitated by the fact that the only places where they live are rigidly protected. They are in Yellowstone National Park and on a newly established wildlife refuge at Red Rocks Lake nearby in Montana. The refuge is administered by the Biological Survey, and National Park Service rangers aid in the protection of the swans that nest in the park.

On Muskrat Houses

Favorite nesting places are on top of muskrat houses, Mr. Hull told the meeting. For this reason artificial mounds resembling muskrat houses were built, to make additional nests possible, and the swans took to them very readily. It is also planned to increase the water areas in their habitat, and to build artificial islands where they may safely rest and preen.

Their worst enemies are coyotes. Absolute control of these predators is essential for their preservation, Mr. Hull declared, adding, "A single coyote on their breeding grounds may destroy many nests, as well as adult birds and cygnets."

Efforts on behalf of the trumpeter swans seem to be meeting some success. A census in 1936 showed 69 adults and 39 cygnets, or young birds; the 1938 census showed 93 adults and 55 cygnets.

Another Vanishing American is being carefully watched, and safeguarded as far as possible, by the U. S. Biological Survey, Joseph C. Allen, Survey zoologist, stated. It is a species of bighorn known as Nelson's mountain sheep, that lives in the desert mountains of Nevada. There are pitifully few of the animals left, and it will require all possible vigilance and care to save the species from extinction.

Coyotes Take Toll

Coyotes and other predators take toll of the lambs, and it is necessary under some circumstances to fight the coyotes, Mr. Allen stated. A much more destructive predator, however, is one that cannot be shot at sight: the prowling human poacher. Incessant and thorough patrol of the sheep's range is necessary to keep his nefarious activities in check.

Bolder, more enterprising immigrants into this new land don't stop right at the ports where they enter this country. They keep on travelling, until they find a homesite that suits them. So is it also with the chukar partridge, a hardy, sprightly game bird brought here from northern India and central Asia, according to W. O. Nagel, research associate at the University of Missouri.

Missouri was chosen as a sample state

for the study of the chukar's habits and preferences, because it offers so wide a range of habitats, from the woody heights of the Ozarks to the flat swamps of the Mississippi and Missouri river bottoms. Other states are watching the outcome of the experiments there, before undertaking large-scale chukar introductions of their own.

During the past two years, 1351 chukar partridges have been turned loose in nine widely distributed and strongly varying habitats, Mr. Nagel stated. All but 341 of them have disappeared. It is not believed that many of them have been killed by predators or died of natural causes, but it is considered more likely that they have migrated out of the territory under observation, in search of the kind of homes that suit their own ideas. They have been known to travel as much as fifty miles in a few days, in these home-seeking wanderings.

Ideal Game Bird

The chukar partridge is considered an ideal game bird in many respects. It is far hardier than the ring-necked pheasant, enduring both cold and heat. The young chicks are able to fend for themselves at a very early age. Natural increase is rapid. After the data from the Missouri experimental releases have been properly interpreted, it is hoped that their introduction into America will become general.

Lake Meade, the artificial inland sea now forming behind Boulder Dam, is being made a good place for ducks by stocking it with food plants of the kinds they like, Robert E. Towle, of Boulder Canyon Wildlife Refuge, told his colleagues.

Three zones have to be considered: the fluctuating level of the lake itself, the shoreline subject to periodic flooding as the waters fill in and are drained out, and the dry shores permanently above water. Each habitat requires a different food-plant setup.

In contrast to the difficulty of making Lake Meade fit for ducks is the automatic benefit it has brought to the upland wildlife, especially the mountain sheep. The lake's 550-mile shoreline vastly increases the area where these animals may come and drink, and thereby multiplies their range a thousandfold.

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A large house excavated recently in Crete appears to have been inhabited within two generations of the Trojan War, thus showing the impressive style of mansions in Homer's age.

PHYSICS

Release Atomic Energy From Massive Thorium

Splitting of Uranium Atom Is Followed By New and Sensational Experiments at Johns Hopkins University

SCIENTISTS have smashed another chemical element and made its atoms give off the tremendous quantities of energy which have long been locked within them. The element is heavy thorium.

Experiments just made with the 1,000,000-volt atom smasher at the Carnegie Institution of Washington show that high speed neutrons (neutral atomic particles) will split thorium into two parts and yield energies so enormous that they have not yet been accurately measured, Science Service was told.

This new experiment follows closely on the heels of the splitting of uranium, which also gives up its atomic energy in the splitting. Similar experiments on thorium have been done independently at Johns Hopkins University. Both American researches confirm results known to have been secured a few days ago at the Institute for Theoretical Physics in Copenhagen by Dr. R. Frisch. A report of the Frisch experiments is soon to appear in the British science journal *Nature*.

Takes Higher Energy

The release of thorium's atomic energy differs from that of uranium in that only very energetic neutrons from lithium, with energies of millions of electron volts, seem to be able to split the element and release its energy.

For uranium, both high and low energy neutrons appear able to touch off the "trigger" mechanism inside the atom that makes it split into two parts and release energies estimated at 200,000,000 electron volts.

Carnegie Institution scientists have also made a quick survey of other heavy elements—bismuth, lead, thallium, mercury, gold and tungsten—for similar results. But no conclusive evidence of splitting has been obtained for these non-radioactive elements.

While the research scientists at Carnegie are working night and day on both of their huge atom smashers, theoretical scientists are puzzling over the meaning of the astounding experiments.

Most plausible suggestion now is that the action of neutrons on uranium and thorium is a kind of resonance phenomenon inside the nucleus of the atom. Neutrons smashing into the atom with some special energy can shake it and make it split apart. The enormous binding energy which holds it together is released in this process.

Experiments now in progress seek to find if there is some particular neutron energy which is most efficient in releasing the atomic energy. In the case of thorium, the most efficient energy lies somewhere between 400,000 and 2,000,000 electron volts. The Carnegie scientists systematically are narrowing these limits.

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PHYSIOLOGY

Premature Aging Ascribed To Mineral Starvation

WHEN an adult lacks vigor and becomes old before his time, he is probably suffering from long years of mineral starvation. This suggestion is made in the *Journal of the American Medical Association*. (Feb. 4)

Lack of sufficient calcium and vitamin D in the diet is now known to be the reason why the bones of elderly persons become abnormally porous. "Senile osteoporosis" is the name physicians give to the general demineralization of the skeleton that is commonly present in elderly persons.

This condition over a period of many years may result also in pathologic changes in the kidneys and other vital organs and thus affect the general health, the medical journal declares.

Complete studies of mineral metabolism on normal or average persons in different age groups are recommended.

Too little effort has been made to understand or prevent the sicknesses that we have been accustomed to accept as an inevitable accompaniment of advancing years, the journal states.

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CAMERA MACHINE GUN

For training aerial gunners is this type of machine gun camera demonstrated at the National Academy of Sciences in Washington. Such cameras are mounted in the combat planes of the Army and Navy during maneuvers and train pilots in aerial attack. As the trigger is pressed the object in the "line of fire" of the dummy gun is photographed. Later the films from the various planes are developed to see who killed whom in the dummy war.

METEOROLOGY

Upper Air Data Will Aid In Forecasting the Weather

The Word "Probably" Will be Seen Less Frequently In Prognostications Because of Air Mass Analysis

By COMDR. FRANCIS W. REICHELDERFER
Chief, U. S. Weather Bureau

THE WORD "probably" will be seen less frequently in the daily weather forecast when the observations of conditions in the upper air are further extended by the U. S. Weather Bureau.

In its efforts to meet modern demands for specialized weather service, the Weather Bureau has in recent years given more and more attention to what goes on in the air far above the earth's surface. It was recognized by meteorologists many years ago that the weather experienced by man on the ground resulted from nature's processes in the vast upper air as well as from elements observed at the earth's surface.

In fact, the layer of air next to the ground in which man normally lives and moves is but a very thin portion of the atmosphere above us, thousands of feet in height, most of which in one way or another takes part in the "manufacture" of the weather.

One of the difficult problems of meteorology is to obtain observations of these important conditions in the upper air—the temperature, the humidity or moisture content, the pressure and the winds at significant heights in the atmosphere—and having obtained these data, to analyze them quickly and to determine how the various air masses will interact to change the weather. If we understand these changes we can forecast what the weather will be tomorrow.

How can an observer on the ground tell what the temperature, humidity and other elements are at several thousand feet altitude?

The upper winds he can determine in clear air by observing a small pilot balloon through a kind of "telescope" called a theodolite. But in general he cannot tell the temperature and humidity accurately unless he goes up in an aircraft with instruments and makes the observations personally, or sends a recording instrument up in some sort of aircraft.

Several Methods

Several methods have been used. Small sounding balloons have been and in some cases still are employed with recording instruments attached. But this method is very slow because the observer must wait until the recording instrument drifts to the ground on its small parachute and is found by some chance passerby and returned by mail—sometimes weeks or months later. In some cases it is never found.

A somewhat faster method is the use of box kites with recording instrument attached. After ascent with the instrument, the kite, or kites in tandem, are hauled down and the instrument record obtained. But this method also is slow and depends upon favorable winds to take the kites even to moderate heights. It is no longer used in this country because of attendant hazards.

Other methods include sending instrument and observer up in an airplane, or occasionally even a free balloon. Upper air observations by airplane are still in use daily at six Weather Bureau stations in the United States, at eight naval stations, and until last July, at seven army stations.

But the newest method of obtaining the temperature and humidity of the air high above the surface is the use of the radio-meteorograph, or the radio-sonde as it is called in this country. This is actually a modern development of the earlier sounding balloon with its recording meteorograph. But with the radiosonde the instrument transmits by radio signals which indicate the air pressure, temperature and humidity every few hundred feet up to 60 or 70 thousand feet. The observer on the ground receives this information through his special radio recorder as rapidly as the balloon ascends. This method is speedier than others and promises to become the most commonly used. Today there are six Weather Bureau, *(Turn to Page 110)*

PUBLIC HEALTH

Public Health Service Announces Malaria Test

A SIMPLE new blood test aiding in recognizing malaria has just been announced by the U. S. Public Health Service. The new test was devised by H. O. Proske, chief medical technician, and Dr. Robert B. Watson, senior malariologist of the Tennessee Valley Authority.

The test is based on the fact that a certain fraction of the proteins in blood, the euglobulins, is increased in most cases of malaria and this increase can be shown by a chemical color test.

Malaria cannot always be diagnosed from the symptoms, it is explained, because many of these are similar to those of other diseases. Clinching the diagnosis by searching for the malaria germs in the blood is also sometimes difficult, especially if the number of these germs in the blood is small. The new test, which is easy to perform in any clinical laboratory, gave 97.4 per cent. positive reactions in a series of known malaria cases as compared with 81.9 per cent. found by microscopic examination.

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PSYCHOLOGY

New Baby Stirs Rivalry In Primitive Child Mind

RIVALRY that children feel when a brand-new baby arrives is just as real in primitive families as in civilized homes.

This situation of childish rivalry for the mother's attention is a universal experience, found whenever a mother has more than one child in her care, explains Dr. David M. Levy of New York in a report of experiments to the *American Journal of Orthopsychiatry*.

Dr. Levy, psychiatrist, and Miss Jeannette Mirsky, anthropologist of Columbia University, have been finding out how primitive Indian children in Guatemala feel about "the youngest." It takes knowledge of mental processes plus knowledge of primitive customs to fathom the deep-lying emotional currents in the breasts of youngsters in surroundings so different from civilized life.

To get at a little Indian girl's feelings, the experimenter would set dolls before her and draw the child out to tell her own narrative of what happens to the doll family when a new baby arrives.

Similar experiments in Argentina by other investigators have yielded similar evidence. The child who has been the youngest, and is replaced, is the one who has the hardest problem in emotional adjustment. Primitive youngsters struggle with jealousy, hostility, guilt, and other reactions typical of children in civilized homes, as they strive to adjust to a less favored place in the mother's care.

Among Quekchi Indians studied by Dr. Levy, a child typically receives maternal love and care for two years or longer and then is relegated to care of an older child in the family. The older child apparently takes this responsibility well, Dr. Levy reports, though in the child's mind there may be varying degrees of satisfaction or discontent.

The last-born child escapes the emotional upsets of being displaced as the baby. The last-born is typically a favorite, Dr. Levy found, and often spoiled, and in psychiatric terminology the last-born makes a "good adjustment."

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PHYSIOLOGY

Suggests Adding Vitamin B_1 To Candy And Liquor

MANUFACTURERS of candy, white bread, refined cereals and sugar as well as alcoholic beverages should add thiamin chloride to their products as a health protective measure, Dr. Norman Jolliffe, New York University College of Medicine professor, suggested at a meeting of the New York Academy of Medicine.

Thiamin chloride is vitamin B_1, which gives protection against nervous disorders.

It would be much better, Dr. Jolliffe pointed out, if people would get their necessary ration of this vitamin by substituting whole wheat bread and whole grain cereals for white bread and refined cereals and by cutting down on the annual per capita consumption of 100 pounds of vitamin-free sugar and vitamin-free alcohol. Failing this, he suggests the incorporation of enough of the vitamin in the vitamin-free foods to insure that each person gets enough in his daily diet.

A protest against the present vogue of "vitamin cure-alls" was made by Dr. Gilbert Dalldorf, director of laboratories at Grasslands Hospitals, Valhalla, N. Y. Dr. Dalldorf said that from the common sense viewpoint an "essential weakness of the practice is that those individuals able to afford a dollar a week for vitamin pills usually do not need them and those who might be benefited cannot afford them."

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IN SCIENCE

TECHNOLOGY

Photography Is Century Old, Rubber's Vulcanization Also

ONLY by looking back a hundred years is it possible to realize how young is science—or how long it takes man to utilize the knowledge he acquires, painfully, slowly by his inquiries into nature and experiments with new things.

Photographs play such a major part in our daily life that it is difficult to imagine a civilization without them. Yet the art of photography can be dated from a century ago.

Nothing excited more interest and enthusiasm in the scientific circles of 1839 than the publication of an account of Daguerre's method of obtaining pictures on metal plates. Arago, a leading French astronomer of the day, reported Daguerre's invention to the French Academy of Sciences on Jan. 7. Later in the year the French government purchased the invention. A full description of the process was given in a pamphlet published in France and the Journal of the Franklin Institute in Philadelphia, still a leading science journal, published for Americans a description in its November 1839 issue.

In England there was another notable step in early photography. Just a few days after the French scientists heard of Daguerre's work, the great Faraday at the Royal Institution described Fox Talbot's invention of "photogenic drawing."

To rubber also 1839 is a significant year. It was then that Charles Goodyear here in America discovered his process of vulcanization, basic in almost every significant use of this important material.

It was only a century ago that man came to realize that he and all the higher animals and plants are made up of cells. This discovery was announced in 1839 by the naturalist Theodor Schwann and Matthias Jakob Schleiden.

Josiah Willard Gibbs of Yale was born in 1839. His name will always be associated with the phase rule in chemistry and he applied the second law of thermodynamics to the relation between chemical, electrical and thermal energy. Robert Henry Thurston who organized America's first mechanical engineering laboratory at Cornell had 1839 as his birth year.

Science News Letter, February 18, 1939

NE FIELDS

PUBLIC HEALTH

Milk-Borne Disease Danger In 726 U. S. Cities

DANGER of disease carried in milk exists in 726 municipalities in the United States. These cities and towns, the U. S. Public Health Service finds, "are still subjecting their citizens to milk-borne diseases by failure properly to require all milk distributors to show safe milk ratings."

These 726 municipalities are among the 874 in the nation that have adopted the uniform milk ordinance recommended by the U. S. Public Health Service. Of the entire number, however, only 148 are enforcing the ordinance adequately, the state health departments have reported to the federal health service.

"From the standpoint of milk-borne disease," the report declares, "the safest communities are those in which all milk is pasteurized and in which the pasteurized-milk rating is 90 per cent. or more."

Diseases that can be carried by milk are tuberculosis, typhoid fever, scarlet fever, diphtheria, septic sore throat and undulant or Malta fever.

Science News Letter, February 18, 1939

PHYSIOLOGY

New Reason for Anti-Noise Campaign

IF you are engaged in an anti-noise campaign, whether on a small scale in your own surroundings or on a large public scale, you now have a new weapon to use in your fight. Noise is not only an annoyance, hard on the ears and injurious to the nervous system. It also is or can be injurious to the larynx.

This is the organ in your throat from which your voice comes. When you have to talk loud enough to be heard above the din of street noises, machines, typewriter, or subway trains, you are abusing your larynx. Abuse of the larynx, if severe enough, may lead to loss of voice.

Maybe you think the loss or ruin of a voice is important only to the singer, teacher or public speaker. If so, try to remember your last attack of laryngitis that made you temporarily voiceless, or try to stop talking for a few hours.

The dangerous results of abuse of the larynx are explained by Drs. Chevalier Jackson and Chevalier L. Jackson, Philadelphia physicians, in *Hygeia*, an American Medical Association publication.

"The human larynx" they state, "is too beautiful, too useful and too delicate an instrument to be used in mere creation of din.

"Shouting and cheering at football games, like forceful singing and speaking, often cause little hemorrhages on the vocal cords; these hemorrhages develop into the vocal nodules and various kinds of tumors that ruin the voice unless removed."

Talking to persons who are hard of hearing is a common form of vocal abuse. Alcoholic beverages are bad for the voice because the alcohol dilates the tiny blood vessels in the lining of the larynx. One drink does this and a few drinks a day will risk eventual impairment of the voice. An oil in tobacco smoke is injurious to the larynx, and you may be affected by sitting in a smoky room, even if you do not smoke yourself.

Science News Letter, February 18, 1939

ENGINEERING

Riderless Bicycle for World's Fair Race

A RIDERLESS bicycle went into training here for the world's first hundred-thousand-mile phantom race, which will start next May at the New York World's Fair.

At its "helm" is an "electric eye", a photo-cell which keeps it running upright along the straight and narrow—a groove which doesn't begin anywhere and doesn't go anywhere either. The bicycle will follow this routine at the Fair, rolling up an impressive mileage total.

No wires or braces of any kind support the bicycle which coasts along in the groove formed by three metal rollers. A pair of movable weights fastened to the handlebars and front mudguard, the photo-cell and a "Silverstat" keep the wheel in proper position.

If the bicycle tilts, varying amounts of light are reflected from a mirror under the pedals to the photo-cell. The electric current thus created operates the Silverstat, which in turn regulates a motor. The motor steers the front wheel and moves the two weights to make the wheel keep its balance.

Built for the Westinghouse exhibit at the Fair, the bicycle will show the nature and ability of electrical control mechanisms.

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AGRICULTURE

Friday Fish Is Being Turned Into Everyday Bacon

FRIDAY food is being turned into breakfast bacon for the rest of the week, at the Dominion Experimental Farm in Nappan, Nova Scotia. S. A. Hilton, of the Farm staff, has found that fish meal is an excellent meat-making diet to feed to bacon pigs, comparing very favorably with skim milk as a supplementary protein ration.

Science News Letter, February 18, 1939

MATHEMATICS

Center to Coordinate Work On Calculating Machines

MASSACHUSETTS Institute of Technology has founded a new center of mathematical analysis, coordinating the work on its calculating machines, in order to further the development of new types of calculators and also to facilitate the use of the M.I.T. equipment by other research institutions and industry.

The new center will have a staff of ten, and an advisory board will decide on the priority of applications for use of the apparatus in mathematical solutions. It is being financed by a grant of $45,000 from the Carnegie Corporation of New York, and is expected to be open for work in the fall.

Equipment made available for use through the center will be the original differential analyzer, developed under the direction of Dr. Vannevar Bush; a new, larger, faster, and more accurate differential analyzer, now under development; a cinema-integraph; the network analyzer; simultaneous calculator; a group of punched card machines; and miscellaneous commercial and special machines.

Science News Letter, February 18, 1939

RADIO

Streamlined Microphone Reduces Reverberations

See Front Cover

NEWEST type of radio pickup is the cardioid directional microphone developed by the Western Electric Company and pictured on the front cover of this week's SCIENCE NEWS LETTER.

Streamlined in its external appearance, the new device reduces reverberations and noise which are unobjectionable when heard in the studio but which are highly undesirable when they issue from the source of radio sound in the home—the loudspeaker.

Science News Letter, February 18, 1939

PSYCHOLOGY

What Makes You Laugh

Despite Old Proverb, Unexpected Doesn't Always Happen, But When It Does, Results Are Often Considered Amusing

By MARJORIE VAN DE WATER

JOSH BILLINGS said: "There iz two things in this world for which we are never fully prepared, and them iz—twins."

If you laughed at that joke, you were amused in a superior adult way by the very same situation that produced gleeful gurgles in a baby who is tossed towards his mother's arm and then suddenly jerked away and planted on father's knee instead.

At least that is Max Eastman's theory of what puts the fun in funny and the laugh in laughter. In a good joke, he says, your mind is led on in a certain pathway. You are looking forward to a certain ending to the line of thought. Then suddenly that goal is jerked away and you are left nowhere, or, better still, landed somewhere else instead.

That is why the clown is funnier when his drollery comes from a solemn or grotesque countenance. That is why the angry old lady sends us off into a roar when her tirade is choked by the sudden slipping of her false teeth.

But you must be in the mood for fun. Otherwise the performance may seem appalling.

Not Always At a Joke

Of course, when you laugh it need not be at a joke. We laugh for many reasons —or for none at all.

At home, my little twin nieces distinguish between the "funny-ha-ha" and the "funny peculiar." So we might also distinguish between the "ha-ha-funny" and the plain "ha-ha-ha."

Cynical uncles and bored grandmothers have been known to insist that the baby's first smile is due not to pleasure but to gas on the stomach, but even parents break down and acknowledge that health is a surer stimulus to infant laughter than is humor.

Ask any father who has stood on his head or wagged his ears in an effort to still the wailing of an insomniac baby. He will readily enough admit to only partial success. A new class for expectant fathers in New York teaches the paternal pupils to put junior over the shoulder and pat the air out of him.

The laughing baby is the healthy baby and one free from discomfort. We have this on the authority of a psychologist who has made a scientific study of child laughter, Dr. Grace E. Bird, of the Rhode Island College of Education.

But she needn't have stopped with babies. It is my own opinion that the grown men and women who laugh are not the ones aching with sciatica or those trying to divert themselves with the humor magazines left optimistically in the dentist's chamber of waiting. "Laugh and grow fat" has been turned around in the telling. The original version was, "Be fat and laugh, sir."

With Activity

Children laugh, too, with physical activity, especially over new success at a physical skill. The chuckles and giggles of a baby walking or running for the first time or bringing his hand down smack in the middle of the birthday cake are like those of an adult taking his first trip down the toboggan slide or riding the silly devices at an amusement park.

Have you ever wondered why a high school girl laughs? Just let two or three of them get together and one of them may mention just a single word. It is probably some innocent little word to which not even the most imaginative can attach humorous association, like "hot" or "stupid." But its utterance will set the whole bevy off into uncontrollable giggles. And this keeps up until the male member of the household throws down his paper with an oath and sets off downtown.

The answer to what arouses this sort of mirth is not to be found in any tome on the psychology of the humorous. But the physician has a clue to the matter, for it is a nervous laugh and particularly afflicts high-strung, mentally overworked girls at adolescence.

Children who get fits of giggles are more likely to have the attacks when they are tired by the terrible exertion of sitting still. This accounts for the seizures that take place in church and at funerals. The giggle fits often terminate in tears.

Some psychologists have held the theory that laughter is a social gesture, and have linked the baby's first chuckle with his awakening to a world outside his own ego. But this does not apply to kindergarten children, Dr. Bird tells us.

When a kindergarten child finds something funny he laughs right out and by himself. There is no need for him to tell the joke or share his mirth. He has the amusing idea that his entertainment is a personal affair.

When the kindergarteners do join in social laughter, it is of an entirely different kind from their hilarity over the amusing, Dr. Bird found. Under such circumstances, no one seems to know why he is laughing or at what. He just joins the chorus. The laughter is boisterous and noisy and might just as well be jumping or shouting, so far as its humorous import is concerned.

Very different is the polite tittering of adults over the teacups or the wine glasses, Dr. Bird says. For this is really social.

"Often, indeed, the mere fact that individual adults find themselves in one another's society is apt to create laughter, although their conversation may be commonplace to the extent of dullness, with no attempt at wit or humor," she comments. "In some cases this behavior may be a defense against inadequacy in conversation or social adjustment just as a child's laughter may be a defense against the realization of a baffling or confusing situation which presents a problem to be solved.

"In most cases, however," she admits, "this type of adult social laughter probably registers satisfaction or well-being."

At a Good Time

In other words we laugh when we are having a good time. If the adult's idea of fun is somewhat different from that of the infant, that may account for his chuckles originating over a different sort of beverage.

But when it comes to the real laugh of amusement, Dr. Bird's observations of kindergarteners confirms Max Eastman's keen summing up. Children laugh at the unexpected, the inappropriate, the temporary baffling. And if the child's jokes are puzzling to the adult, maybe it is because we have become too well immunized to the outlandish.

What is funny about a dishpan? No housewife or dutiful husband would dream of laughing at one. But when a dishpan was brought into the classroom,

DOES IT SEEM FUNNY TO YOU?

Inverted chairs are a scream to this young man.

it provoked a burst of hilarity rivalled only by Mary's little lamb.

Pulling a button off a coat heads Dr. Bird's list of typically humorous situations among the children. Maybe you think that is not funny, but I have seen sophisticated adults mirthful over the spectacle of a man sewing a button on his coat.

A little boy burst into tears during the playing of what was generally considered as cheerful music. The teachers expected mirth at such an unexpected deviation from routine. But only the teachers could see the essence of a humorous situation in that.

To the children crying in or out of school was perfectly commonplace.

Puppy As a Clown

But when they saw a puppy chase his tail for the first time, they were hilarious over the performance. And when a pet rabbit in the schoolroom kicked and tore paper during a silent period, the effect was almost hysterical.

Adults are often amused (or pretend to be) by their own errors; the child has a different slant on things. When a ball happened to roll straight into the hands of a youngster who anticipated difficulty in capturing it, he laughed heartily.

Another child who expected the pet rabbit to come and eat out of his hand laughed hilariously when it ran the other way.

Laugh at Spilled Paint

Whenever a child spilled paint for the first time, Dr. Bird noticed, he was more inclined to be amused than troubled, except in the case of a little girl who spoiled the dress she had been cautioned to take care of.

Upsetting a chair or wastebasket or dropping a cup was always funny unless it happened too often. Then it was unworthy of notice.

Out walking with the twin nieces, I noticed a mossy stone that was very slippery and warned them about it. But one of them stepped on it, nevertheless, and fell. The other child was shocked.

"Oh, you shouldn't have fallen down, you were told not to!" she cried.

But the other youngster, prone and bruised, found the situation amusing.

"I never heard!" was her explanation of why the accident was funny.

As children grow older, mentally and emotionally, they become able to take delight in more subtle forms of humor. Delicate satire, gentle sarcasm, whimsical nonsense, begin to have some appeal.

Yet even when they reach high school age, young people are woefully lacking in ability to take delight in witty plays upon words and other more intellectual sorts of humor, it is revealed by tests conducted by Miss Winifred H. Nash of the Boston Memorial High School for Girls. Pupils with high intelligence rating show a much keener appreciation of humor than do those of low IQ, she found from her study of 503 students.

Brightest Miss Subtleties

But even the brightest are woefully lacking in enjoyment of the more subtle types of humor. Mark Twain, American laugh laureate, seemed funny to only 69 per cent. of those tested. The delicate whimsicality of Charles Lamb appealed to only 27 per cent.

The pupils, in general, appear to appreciate only the short, sharply-pointed joke that starts a roar of laughter at once, reports Miss Nash.

Humor of a gentler, more subtle type makes little appeal.

Education in humor is needed, she concludes, in order that high school students may understand the humor of satire, whimsicality, puns, delicate playing with ideas, and other forms of humor that start the slow smile, the quiet chuckle or the pleasant glow of genial humor.

A school course in laughter. That is in short the proposal of Miss Nash, seconded by *The Journal of Education,* in which her report appeared, and by *School Management,* another education journal going to superintendents and other school officials.

It is worth consideration. If the high school is to train young people for life in this twentieth century world, development of ability to recognize the ridiculous, to smile at the silly, and to gain pleasure from playfulness, should be as important as, say, a course in cooking or in algebra.

Perhaps the textbook for such a course might be Max Eastman's "Ten Commandments of the Comic Arts," which at all events should be followed reverently by all those who would be amusing. Here they are as given in his book, *Enjoyment of Laughter,* (Simon and Schuster):

1. Be interesting.
2. Be unimpassioned.
3. Be effortless.
4. Remember the difference between cracking practical jokes and conveying ludicrous impressions.
5. Be plausible.
6. Be sudden.
7. Be neat.
8. Be right with your timing.

9. Give good measure of serious satisfaction.

10. Redeem all serious disappointments.

The first law is important because the best of jokes may fall flat unless it "taps a stream from one of the eternal glee-reservoirs" (such as sex) or unless a real emotion interest is built up.

The reason for the second law is that we cannot laugh about what matters too much. Death is seldom the butt of a good joke. The audience must be in a playful mood if anything is to seem funny.

The labored joke is wearying. Hence law 3.

"By a practical joke," says Mr. Eastman of his fourth commandment, "I do not mean setting a can of water on the upper edge of a door and then calling someone in the next room—although that is a practical joke and a good one, especially if the person does not come, and you forget what you wanted him for and get up and go after him yourself."

He means a joke which comes to a point as distinguished from the humorous story which is laugh-provoking throughout. Laws 5 to 10, the importance of which are obvious, apply only to the pointed joke.

These laws bar the dragged-in joke, the chestnut, the inverted joke or riddle, and the attempt to emphasize the point by repetition.

The final commandments require that the joke have some link or pertinence in the more serious interests of life.

"During the depths of the Great Depression," says Mr. Eastman, "a story went around about a young man who had a nervous breakdown. The doctor recommended to his parents that they put him somewhere where he would not be disturbed, and so they put him in business."

This article was edited from manuscript prepared by Science Service for use in illustrated newspaper magazines. Copyright, 1939, by Every Week Magazine and Science Service.

Science News Letter, February 18, 1939

Over 1,500,000 new houses have been built in Britain in about six years.

More than 100,000 miners were trained in first aid by the Bureau of Mines in the past year ending June 30.

If You Are Interested in Better Health and Longer Life Read

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FORESTRY

New Deadly Disease Is Destroying Elms in Ohio

A NEW-FOUND, deadly disease, caused by a filterable virus instead of a fungus, has killed many hundreds of American elms in Ohio. Plant pathologists of the U. S. Department of Agriculture fear that it will prove even more destructive than the so-called Dutch elm disease that they have been fighting for several years in the neighborhood of New York, unless its cause can be discovered and means for combating it developed.

The disease was first called to the attention of government scientists in Ironton and Dayton, Ohio. During three years it killed more than 1,000 out of about 1,800 elms in Chillicothe. It is now rampant in Columbus. It was at first thought to be a "city" disease, but it has since been found in forest trees in West Virginia, northern Kentucky and southern Indiana and Illinois.

Symptoms are: first, a slight shriveling and brittleness in the leaves; then a rotting of the roots and the inner bark of the trunk. Within a few months the tree may be dead.

The new disease is not at all related to the Dutch elm disease of the Northeast. That is caused by a fungus which is carried about by a beetle. The Ohio valley elm disease has been proved to be due to a filterable virus—a mysterious, self-multiplying something that is too small to be seen through a microscope. How it gets from one tree to another is still unknown. The present outbreak is the first known instance of a virus disease causing a fatal epidemic among trees.

Since the disease may have gained a foothold outside the Ohio valley, government authorities wish to be informed regarding trees showing symptoms of its presence. Notices should be sent to the Division of Forest Pathology, U. S. Department of Agriculture, Washington, D. C. Because the disease is caused by a virus that cannot be isolated and identified, there is no point in sending diseased samples.

Science News Letter, February 18, 1939

GENERAL SCIENCE

Leading Scientists Are Born and Trained in East

TO THE Yankee ingenuity and curiosity of New England stock, America apparently owes the development of most of her most outstanding scientific men.

A survey of the names in *American Men of Science,* starred for their eminence, reveals that New England contributed far more, in proportion to general population than did any other section of the country. The yield of 77 per million in the wooden nutmeg country was double that of the Middle Atlantic States (37 per million) and far outdistanced that of the East North Central (30), Pacific (27), West North Central (22), Mountain (17), South Atlantic (11), and South Central (4).

The East has also contributed the training for these scientific men.

"Of those who received American bachelors degrees,'" writes Prof. Stephen S. Visher, of Indiana University, in reporting his survey to the *American Journal of Science,* "nearly 30 per cent graduated in the East North Central States, 22 per cent in New England, but less than one-eleventh in the South. For their doctorates, over one-fourth of those with American doctorates went to New England, nearly one-fourth went to Middle

● RADIO

Dr. Henry Field, Curator of Physical Anthropology at the Field Museum of Natural History, will be guest scientist on "Adventures in Science" with Watson Davis, Director, Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, Feb. 23, 7:15 p. m. EST, 6:15 p. m. CST, 5:15 p. m. MST, 4:15 p. m. PST. Listen in to your local station. Listen in each Thursday.

Atlantic universities and a like number to those of the East North Central States."

Very few women are included among the starred scientists. In 1937, nine women were starred—three zoologists, two geologists, and one each in anatomy, astronomy, botany and psychology.

But if you think of these eminent savants as ancient graybeards, you are mistaken. The average age for receiving the coveted star is only 43 years. Mathematicians and physicists are much younger, averaging only 36, and chemists average but 41. Psychologists are close to the general average, 44, while biologists are 46, pathologists 48 and geologists 49.

Industry gives employment to exceedingly few of America's most eminent scientists. Educational institutions support 76 per cent of them. Research institutions can claim only one-twelfth. Government employment takes in one-fifteenth. Less than a sixteenth are in applied or commercial science.

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AERONAUTICS

Reversible Pitch Propeller To Be Tried as Brake

Flying Boat Designers Recognize Need of Future Pilots For Some Means of Slowing Their Craft at Landing

AIRPLANE propellers as brakes? Sounds odd, when you're used to thinking of whirling blades speeding a plane instead of stopping it. But it may soon be tried to aid in maneuvering the still bigger flying boats for transoceanic air services of future years.

Flying boat designers at a plant near Washington have asked a nearby experimental firm to test this paradoxical idea, it was learned, and thereby show once more that the unusual can and often does happen in aviation. Basis of the experiments is the fact that reversing the pitch or twist of the propeller blades reverses the direction of the airstream and slows the plane.

The designers, taking a look at available waterways where transoceanic airliners of the future will have to land and take off, base their request for action on the belief that future planes will give many a pilot a maneuvering headache. This does not, however, apply to the biggest today; the engineers are thinking of ships still on their drawing boards.

Propellers with reversible pitch blades can do the trick and will be manufactured for the test, it was stated. Such propellers, with the blades twisted oppositely to their usual position, would reverse the direction of the airstream they create. Instead of slipping it back past the wing, it would blow it forward, slowing the plane.

This scheme — which isn't so new, since, like many other things aeronautical, it has been thought up and even tried several times before—is intended only for planes on the water or on the ground. If you lose speed in the air, you don't stay up very long.

The whirling brakes would help in maneuvering big flying boats with four or more engines by enabling a pilot to use one or two of his motors producing their reverse effect, while running the others as usual. He would be able to turn quickly—like an oarsman pulling his oars in opposite directions. In addition, all four motors could be used as brakes to come to a quick stop.

Two other possible uses are foreseen. Landplanes, which now have wheel brakes, might use propeller brakes. Dive bombers developing enormous velocities —which, by the way, are not desirable despite the general impression to the contrary—could use the reversible pitch propellers to slow their descent to a paltry 200 or 300 miles an hour.

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CHEMISTRY

Japanese Report Mucilage Made Out of Seaweed

CHEMISTS of the Osaka Industrial Experimental Laboratory of Japan's ministry of commerce and industry have developed a process for manufacturing mucilage from seaweed.

An output of 10,000 pounds monthly has already been achieved. While details of the process are secret as yet, washing the seaweed to remove salt is an essential step in the process.

Science News Letter, February 18, 1939

New Blakiston Books

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Third Digest of Investigations In the Teaching of Science

Curtis

This work contains digests of studies made from 1931 to 1937 inclusive, selected largely by members of the National Association for Research in Science Teaching. The studies cover elementary, secondary and college science problems.

419 pages. Washable Fabric $3.50. By Francis D. Curtis, Ph.D. (Univ. of Michigan).

●

Commercial Flower Forcing 2d Edition

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This book presents modern floriculture in a practical way for both commercial florist and student. Much new material dealing with the control of flowering, soil substitutes, crop protection, rooting of plants, etc. is included.

49 Illus. 557 Pages. Washable Fabric $4.50. By Alex Laurie, B.S., M.A., and C. H. Poesch, B.S., M.S. (Ohio State Univ.).

●

Textbook of Organic Chemistry.

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This book is designed for a two-semester beginning course in the theory of organic chemistry. It is intended for students who will major in chemistry or specialize in organic chemistry, and for those enrolled in premedical or chemical engineering courses.

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●

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WILDLIFE MANAGEMENT

NATURE RAMBLINGS

by Frank Thone

Smaller Homes

WITH the lion's share of a continent at our disposal, we Americans are rather given to thinking of wildlife conservation in very large and spacious terms. The idea that anything worth while can be done in less than a thousand square miles seems hardly worth considering.

Yet two of Europe's smaller countries, Denmark and the Netherlands, have well-worked-out systems for the protection and encouragement of wildlife, despite the intensive utilization of the last inch of cultivable land necessitated by their limited territories and dense populations.

In Denmark, the government may create wildlife preserves, upon suitable compensation to the landowners. But landowners themselves may set up preserves if they so desire, with the scientific advice and assistance of the government. Two types of wildlife preserves are provided for, intended respectively for game-providing and scientific purposes.

In the Netherlands the cause of wildlife conservation is a genuinely popular one. There is a well-organized society for nature protection, with a membership of 13,000, who are backed by other and even larger organizations such as the bicyclists' union, with over 100,000 members. These groups have been so well able to swing public opinion—not to mention fiscal legislation—that in the past 31 years no less than 39 game and wildlife sanctuaries have been established.

As in Denmark, private landowners are encouraged to put some of their lands to use for the benefit of wildlife. In the Netherlands, this encouragement takes the practical and highly tempting form of a partial remission of taxation. As a result, more than 325 large estates, with a total of over 125,000 acres, have taken advantage of this law—and given the country the advantage of their utilization as homes for game and wildfowl.

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ETHNOLOGY

Cult of Sundowners Linked to Cocktail Habit

OF SERIOUS aspect was a communication handed to those in attendance at an anthropology section "tea" during the recent meeting of the British Association for the Advancement of Science at Cambridge. It was headed: "The Sundowner, its distribution, ritual and sociology."

Excerpts from this weighty report:

"The Sundowner appears to have been limited to Africa and Australia and the neighbouring islands . . . From America and the West Indies we have evidence of a similar custom, known as the cocktail habit. . . . it may be performed at any time during the 24 hours. In England the custom has recently appeared in the form of sherry parties. This culture seems to have reached England from the West, reversing the usual European culture-drift from east to west, the inference being that it is not of Nordic origin.

"Evidence as to its ritual significance is not wanting. First, there is the evidence of its name, 'Sundowner'; philologists are agreed on this point, if on no other; and with this is linked the regularity with which the ceremony is performed at the hour of sunset in the countries where the custom originated.

"Secondly, in its original and austere form, the ritual seems more often to have been performed by men in seclusion after several hours of fasting, and both these facts point to its origin being based on magic.

"Thirdly, part of the ritual consists of raising the glass, uttering an incantation, and then drinking some of the liquid. The incantation varies in different countries, and is often quite unintelligible, e.g. 'Chin-Chin', 'Here's How', and the like are now meaningless phrases but occasionally in country places one hears the phrase 'Happy Days', which unquestionably connects the rite with Sun-Worship, and in particular with the setting of the sun, a point which has hitherto been overlooked by our leading anthropologists."

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two Army and two Navy radio-sonde stations.

The balloon which carries the instrument is about 3 feet in diameter before inflation and 5 or 6 feet in diameter after inflation. It can lift almost three pounds, but the instrument, including its inexpensive radio transmitter, weighs only about 1½ pounds. The instrument now in use for Weather Bureau observations is that developed by the National Bureau of Standards for use of the Navy Department.

The balloon and the instrument rise at a rate of about 1,300 feet per minute. They ascend for sixty minutes or more to an altitude of about fifteen

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miles, after which the balloon bursts and the instrument slowly descends to earth by parachute. A tag attached requests the finder to return the instrument, offering a small reward for safe return. A large per cent. of the instruments are thus recovered.

But, the observer on the ground has received the desired upper air data promptly by radio. With these data the weather forecaster tries to analyze the numerous elements which determine our weather and to present them systematically on the weather map in the form known as air mass analysis. This assists the forecaster in estimating how the various air masses and their characteristic elements will interact to produce future weather. In this way he makes up the weather forecast.

With an extension of these upper air observations to fill in the wide gaps which now exist in our information of atmospheric conditions and processes, it is expected that the day to day changes in weather can be better analyzed and more thoroughly understood, and their future trend more accurately anticipated. Then the demands of the farmer and the aviator, the engineer, the business man and the general public for specialized forecasts of a positive nature can be more adequately satisfied.

For an official explanation of the daily weather map prepared by the U. S. Weather Bureau, send a postal card to SCIENCE NEWS LETTER, 2101 Constitution Ave., Washington, D. C., asking for weather map bulletin.

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PHYSIOLOGY

New Life-Saving Property Discovered in Hormone

Gland Essence That Prepares Mother for Child-bearing Can Pinch Hit for Cortin To Treat Addison's Disease

NEW, life-saving power has just been discovered in a hormone that is primarily concerned with the life-creating process.

This fact, termed "amazing" by its discoverers, is reported by Dr. Robert Gaunt, of Washington Square College, New York University, and Dr. Harry W. Hays, of Princeton University. (*Science*, Dec. 16.)

Crystalline progesterone, the hormone that functions primarily to prepare the maternal body for child-bearing, can double for the life-essential hormone, cortin, to save lives threatened by disease or failure of the adrenal glands.

Cortin is a product of one part of the adrenal glands, the other part of the glands producing the more familiar adrenalin or epinephrin. Life cannot go on when these glands fail to produce cortin, as they do in Addison's disease, unless the deficiency is made up by giving the patient doses of cortin, just as diabetics get insulin to supply this deficiency of their own body.

Crystalline progesterone, Drs. Gaunt and Hays now report, will keep animals alive and healthy apparently indefinitely after total removal of the adrenal glands. Neither cortin nor salt need be given, if the animals get small daily doses of the progesterone.

Progesterone is not likely to take the place of cortin in treatment of Addison's disease sufferers, Dr. Gaunt said, because it is much more expensive. Only possible advantage of progesterone over cortin for such patients is the fact that progesterone can be obtained in chemically pure crystals, which is not yet possible for cortin.

The significance of the discovery that progesterone can double for cortin is not yet known. Dr. Gaunt said, however, that studies are under way now which he hopes will show what the discovery means in terms of body function and possible clinical application.

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PSYCHOLOGY

Blind Spot Hampers One-Eyed Drivers

THE next time you are a passenger in the front seat of an automobile (we won't recommend it for the driver) shut one of your eyes and see how restricted is your view ahead. See how much your field of vision is decreased and your judgment of distance impaired. Then realize the handicap faced by from one to two per cent. of all American motorists who, it is estimated, possess only one eye.

Studies of drivers with handicapped vision have been made recently by Dr. Harry R. DeSilva, W. H. Frisbee, Jr., and P. Robinson of Harvard University. They find that while a person with two eyes can see through a field of view of about 190 degrees—more than a half circle—a one-eyed driver has his vision restricted to 110 degrees or to 135 degrees depending on how much his good eye protrudes and how far out from his face is the bridge of his nose.

Although normal people never realize it, each normal eye has a blind spot which corresponds to the small round region where the optic nerve enters the eyeball and which is not receptive to images cast upon it. With two good eyes these blind spots do not coincide. What is a blind spot for one eye is not a blind spot for the other. Persons with only one eye can only overcome the handicap of such a blind spot by regularly turning their head while viewing the road ahead.

The blind spot covers an area of only 7 degrees, report the Harvard scientists and, at the distance of the windshield, this area amounts to a circle about three inches in extent. However at a distance of 50 feet ahead of the car this same angle blocks out an area of six feet. At a twelve-foot distance a standard road sign falls within the blind spot. A child four feet tall is concealed at a distance of 32 feet, a man at 48 feet, and a whole truck at a distance of 57 feet.

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•First Glances at New Books

Photography

PRINT FINISHING—William Mortensen—*Camera Craft,* 127 p., $2.50. Here is a book that discusses the critical but neglected stage of print making. All the steps are given, from the wash water in the photographic laboratory to the salon wall. Complete details are given on the abrasion-tone process.

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Biology—Chemistry

THE STUFF WE'RE MADE OF—W. O. Kermack and P. Eggleton—*Longmans,* 341 p., $3.20. It is claimed for this book that it is the first volume to interpret for the ordinary layman the science of biochemistry. The British authors tell their story clearly and fully, although perhaps not as excitingly as it might have been from the American viewpoint. A very worthwhile book for the library of any intelligent layman.

Science News Letter, February 18, 1939

Cartography

GENERAL CARTOGRAPHY—Erwin Raisz—*McGraw-Hill,* 370 p., $4. Here is one of the few college texts in America on that rare but most important subject of cartography; the science of map-making. Everyone who has been a tourist has had contact with maps and the science of cartography is so interwoven with daily living that it assumes a vast importance to everyone. Prof. Raisz' book is so clear and so interesting that it sets one drawing small freehand maps during a mere scanning of its contents.

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Aeronautics

THE AIRCRAFT CALENDAR—Eric Sargent, ed.—*Appleton-Century,* 144 p., $2.50. This is another listing of the world's aircraft which, like all the others, suffers from the fact-obscuring mysteriousness that surrounds airplanes today.

Science News Letter, February 18, 1939

Geology

WHEN ALL THE EARTH WAS WHITE—Mary Mercy Hawley—*Christopher,* 98 p., $1.50. A small book that tells the story of ice ages compactly but entertainingly.

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Photography

THE STORY OF A FACE—Hillary G. Bailey—*Camera Craft,* 127 p., $2.50. Here is an elementary book on photography for the amateur which seeks not to provide a list of do's and don'ts and an analytical treatment of the subject, but rather attempts to take the separate portions of photography and assemble them into a synthetic whole. The novice and the general reader will enjoy following the synthesis. The book provides fundamental principles which are basic background for anyone interested in photography.

Science News Letter, February 18, 1939

Physics

THEORETICAL MECHANICS—Carl Jenness Coe—*Macmillan,* 555 p., $5. New text in its field which treats the subject entirely by the vectorial method. Enough material is provided for two one-year courses in the subject. A multitude of problems supplements the excellent treatise.

Science News Letter, February 18, 1939

Chemistry

MODERN METHODS OF REFINING LUBRICATING OILS—Vladimir A. Kalichevsky—*Reinhold,* 235 p., $6. Here is a new volume in the American Chemical Society series of monographs which will have great value for trade workers in the field of petroleum refining. The new technical advances through the year 1937 are given in extensive bibliographies at the end of each chapter.

Science News Letter, February 18, 1939

Photography

CHAMPLIN ON FINE GRAIN (2d ed.)—Harry Champlin—*Camera Craft,* 160 p., $2. Here is a book for the miniature camera enthusiast which discusses the difficult and important matter of the development of camera film and the effects of that development on grain size. The author's new developer "No. 16" is described.

Science News Letter, February 18, 1939

Philosophy—Physiology

LE TEMPS: Etude Philosophique, Physiologique et Psychol[illegible]gique—Joseph Sivadjian—*Hermann & Cie., Paris,* 6 vols., 423 p., 85 fr. Volumes 1 and 2 discuss the metaphysical problem; volume 3, the psychological problem, volumes 4 and 5, the physical and physiological aspects, and volume 6, the problem of the subconscious.

Science News Letter, February 18, 1939

Astronomy

THE ATMOSPHERES OF THE PLANETS—H. Spencer Jones—*British Association for the Advancement of Science,* 14 p., ls. Reprint of the 1938 Norman Lockyer Lecture of the B. A. A. S.

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Medicine—Biography

THE LITTLE DOC—Frazier Hunt—*Simon and Schuster,* 302 p., $2. A sympathetically written biography of Dr. Allan Roy Dafoe, physician to the Dionne quintuplets.

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Photography

THE EIGHTH ART: A LIFE OF COLOR PHOTOGRAPHY — Victor Keppler — *Morrow,* 266 p., photos., $10. A famous photographer describes modern methods of color photography and illustrates his technique with outstanding examples of color photographs in advertising.

Science News Letter, February 18, 1939

Chemistry

CASEIN AND ITS USES—Hans Hadert: Trans. by Henry Goldsmith—*Chem. Pub. Co., of N. Y.,* 103 p., $3. Translated from the German and issued in bound mimeographed form is this readable book on the applications of casein. Specific methods of production of many casein products are given and the book will be of great service to workers in this field.

Science News Letter, February 18, 1939

Physics

FLUORESCENCE AND PHOSPHORESCENCE—E. Hirschlaff—*Chem. Pub. Co. of N. Y.,* 130 p., $1.50. This book is the most recent in a series of the well known Methuen's monographs on physical subjects. A small-sized book packed with information of this technical field, it contains very comprehensive bibliographies.

Science News Letter, February 18, 1939

Chemistry

METAL COLORING AND FINISHING (2d. ed.)—Hugo Krause—*Chem. Pub. Co. of N. Y.,* 222 p., $5. The need for a practical English text on metal coloring and finishing has prompted the translation of this standard German work. The monograph is comprehensive and will serve as a splendid reference guide book for those engaged in this field.

Science News Letter, February 18, 1939

Technology

WOOD PULP—Julius Grant—*Stechert,* 209 p., $4. (approximate price.) Comprehensive account of the entire field of preparation of wood pulp, for use in paper-making, rayon manufacture and other industries. While the book is designed first for the workers in this field of activity, some of the most technical matters have been worked over into a form which will make it readable to junior students in the science.

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